UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,919	02/17/2004	Tingkai Li	SLA0772	1905

27518 7590 12/06/2007

SHARP LABORATORIES OF AMERICA, INC
5750 NW PACIFIC RIM BLVD
CAMAS, WA 98642

EXAMINER	
TALBOT, BRIAN K	
ART UNIT	**PAPER NUMBER**
1792	

MAIL DATE	DELIVERY MODE
12/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/780,919	LI ET AL.	
	Examiner	Art Unit	
	Brian K. Talbot	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Claims 1-19 remain in the application.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of US Patent No. 7,157,111. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims and Patent '111 all teach forming an indium oxide film on a substrate followed by a ferroelectric layer by MOCVD including similar annealing steps and processing parameters.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the

reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 8-19 are rejected under 35 U.S.C. 103(a) as being obvious over Yano et al. (6,387,712) or Park (5,524,092) in combination with either Asano et al. (6,407,422), Li et al. (6,664,116), Li et al. (6,483,137) or Li et al. (6,475,813).

Yano et al. (6,387,712) teaches a process for preparing ferroelectric films. A silicon substrate is coated with conductive subbing layer and then with a ferroelectric layer. The conductive subbing layer functions as an electrode and includes indium-containing oxides (col. 10, line 65 – col. 35). Yano et al. (6,387,712) teaches a silicon substrate with a silicon oxide layer formed thereon (col. 17, lines 53-60 and col. 20, line 20 – col. 21, line 25).

Park (5,524,092) teaches a multilayered ferroelectric semiconductor device whereby an indium tin oxide layer is applied followed by a ferroelectric film (col. 4, lines 11-65).

Yano et al. (6,387,712) or Park (5,524,092) fail to teach forming the ferroelectric film by a MOCVD process.

Asano et al. (6,407,422) teaches a memory device whereby a silicon substrate (11) has a layer of metal (51) including indium/indium oxide deposited thereon. An oxide layer (52) is

applied to the layer (51). Patterning and selective etching of the layer indium/indium oxide layer (51) is performed. Deposition of a ferroelectric material and top electrode are formed to complete the device. The ferroelectric layer is applied by MOCVD (col. 1, lines 15-25 and col. 5, lines 45-60).

Li et al. (6,664,116) teaches the claimed processing parameters for forming the PGO film (col. 2, line 10 – col. 3, line 50).

Li et al. (6,483,137) teaches the claimed processing parameters for forming the PGO film by MOCVD with an injector and precursor gases (abstract and col. 2, line 60 – col. 8, line 45).

Li et al. (6,475,813) teaches the claimed processing parameters for forming the PGO film by MOCVD with an injector and precursor gases (abstract and col. 2, line 25 – col. 3, line 50).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Yano et al. (6,387,712) or Park (5,524,092) process by forming the PGO film by MOCVD as detailed by Asano et al. (6,407,422), Li et al. (6,664,116), Li et al. (6,483,137) or Li et al. (6,475,813) with the expectation of achieving similar results.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (6,387,712) or Park (5,524,092) in combination with either (a) Asano et al. (6,407,422) further in combination with Li et al. (6,664,116) or (b) in combination with Li et al. (6,664,116).

Features described above are incorporated here.

Yano et al. (6,387,712) or Park (5,524,092) (a) alone or (b) in combination with Asano et al. (6,407,422) fail to teach forming a high-k dielectric layer on the substrate.

Li et al. (6,664,116) teaches forming a high-k dielectric layer on a substrate prior to forming a ferroelectric layer by MOCVD. Li et al. (6,664,116) also teaches HF treatment of the silicon substrate (col. 2, line 35).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Yano et al. (6,387,712) or Park (5,524,092) in combination with either (a) Asano et al. (6,407,422) further in combination with Li et al. (6,664,116) or (b) n combination with (b)Li et al. (6,664,116) process by incorporating a high-k dielectric layer between the substrate and the ferroelectric layer because of the advantages associated with it use as detailed in Li et al. (6,664,116).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yano et al. (6,387,712) or Park (5,524,092) in combination with either Asano et al. (6,407,422), Li et al. (6,664,116), Li et al. (6,483,137) or Li et al. (6,475,813).

Features described above are incorporated here.

Yano et al. (6,387,712) or Park (5,524,092) in combination with either Asano et al. (6,407,422), Li et al. (6,664,116), Li et al. (6,483,137) or Li et al. (6,475,813) fail to teach the claimed processing parameters for forming the In2O3 film.

While the Examiner acknowledges this fact, it is the Examiner's position that sputtering indium oxide films are conventional in the art and the processing parameters utilized to produce the indium oxide film would be a matter of design choice of one practicing in the art dependent upon the desired final product. Absence a showing of unexpected results garnered from the

specific claimed parameters, it is the Examiner's position that one skilled in the art would have had a reasonable expectation of success optimizing these well known processing parameters.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BK Talbot 12/4/07

Brian K Talbot
Primary Examiner
Art Unit 1792

BKT